

Serial No. 09/813,706
Amdt. dated May 17, 2005
Reply to Office Action of March 17, 2005

Attorney Docket No. PN01003AA

Amendments to the Claims:

1. (Currently Amended) A method of supporting Internet Protocol (IP) based services initiated through a public network with a public IP address space and public IP addresses within the public IP address space, the services directed to a mobile device through a private network with a private IP address space and private IP addresses within the private IP address space, the method including the steps of:

activating the mobile device in a radio network having a private network with a private IP address space;

assigning a long lived IP address ~~and a user name~~ to the mobile device in a wireless network in response to activating the mobile device in the radio network, wherein the long lived IP address is included within the private IP address space of the private network;

providing a server having an IP address within the private IP address space of said private network and including a database having a cross reference between said a user name assigned to the mobile device and said long lived IP address for said mobile device;

connecting said private network to the public network through a network address translator (NAT);

initiating a push session between a push client having a public IP address in said public network and the mobile device by forwarding from said push client to said server said user name;

retrieving and returning to said NAT said long lived IP address corresponding to said user name in response to initiating the push session; and

assigning a dynamic public IP address within the public IP address space of the public

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network that corresponds to said long lived IP address, thus the mobile device, using an application level gateway that is associated with said NAT and returning said dynamic public IP address to said push client; and

conducting the push session between the push client and the mobile device using said long lived IP address and said dynamically assigned public IP address.

2. (Currently Amended) The method of claim 1 wherein said step of conducting the push session ~~assigning a long lived IP address~~ further includes ~~including said long lived IP address in a home location register database within a~~ conducting the push session via a Gateway GPRS Support Node associated with the radio network or via a Packet Data Serving Node associated with the radio network.

3. (Original) The method of claim 1 wherein said step of assigning a long lived IP address further includes programming said long lived IP address into the mobile device.

4. (Previously Presented) The method of claim 1 wherein said step of initiating a push session further includes creating an IP connection across a radio access network between the mobile device and the private network.

5. (Original) The method of claim 1 wherein said step of providing a server includes providing a session initiation protocol (SIP) registrar server.

6. (Original) The method of claim 1 wherein said step of providing a server includes providing a domain name service (DNS) server.

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7. (Original) The method of claim 1 wherein said step of providing a server includes providing wireless application protocol (WAP) server.
8. (Previously Presented) The method of claim 1 wherein said step of assigning a dynamic public IP address using an application level gateway (ALG) includes using one of a SIP ALG, DNS ALG, and WAP ALG.
9. (Previously Presented) The method of claim 1 further including a step of supplying content from the push client to the mobile device using an IP connection, including said dynamic public IP address, between the push client and the NAT and another IP connection, including the long lived IP address, between the NAT and the mobile device.

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10. (Currently Amended) A private network that is arranged and constructed to support Internet Protocol (IP) based services initiated through a public network, the services directed to a mobile device through the private network, the public network having a public IP address space and public IP addresses within the public IP address space, the private network having a private IP address space and private IP addresses within the private IP address space, the private network including a radio network, the private network including in combination:

a mobile station, the mobile station being served via the radio network using a long lived IP address assigned to the mobile station, said long lived IP address being within the private IP address space of said private network;

a server having an IP address within the private IP address space of the private network that is accessible from the public network, the server including a database having a cross reference between a user name assigned to the mobile device and said a long lived IP address, said server receiving said user name from a push client in the public network assigned to the mobile device, ~~said long lived IP address being within the private IP address space of said private network;~~

a network address translator (NAT), coupled to said server, suitable for connecting said private network to the public network using address translation, ~~said NAT receiving said user name from a push client in the public network and forwarding said user name to said server;~~ and

an application level gateway (ALG) that is associated with said NAT ~~and that,~~ wherein one of said NAT and said ALG, responsive to said forwarding said user name, receives said long lived IP address from one of said server and the mobile device and assigns a corresponding

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dynamic public IP address within the public IP address space of said public network which is returned to said push client, thereby enabling said push client to provide content to the mobile device using the dynamic public IP address and enabling said mobile station to receive said content on said long lived IP address.

11. (Currently Amended) The private network of claim 10, wherein said content travels via a Gateway GPRS Support Node associated with said radio access network or via a Packet Data Serving Node associated with said radio access network ~~further including a radio access network with a home location register that includes said long lived IP address and facilitates establishing a long lived IP context between the mobile device and said radio access network.~~

12. (Previously Presented) The private network of claim 10 wherein the mobile device is programmed with and thus uniquely identified within said private network by said long lived IP address.

13. (Original) The private network of claim 10 wherein said server is a session initiation protocol (SIP) registrar server.

14. (Original) The private network of claim 10 wherein said server is a domain name service (DNS) server.

15. (Original) The private network of claim 10 wherein said server is a wireless application protocol (WAP) server.

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16. (Original) The private network of claim 10 wherein said application level gateway (ALG) is one of a SIP ALG, DNS ALG, and WAP ALG.

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17. (Currently Amended) A private network that is arranged and constructed to support Internet Protocol (IP) based services initiated through a public or private network, the public network having a public IP address space and public IP addresses within the public IP address space, the private network having a private IP address space and private IP addresses within the private IP address space, the services directed to a mobile device through the private network, the private network including in combination:

a radio network;

a mobile station, connected to the private network via the radio network, using a long lived IP address assigned to the mobile station, said long lived IP address being in said private IP address space of said private network;

a server having an IP address within the private network, the server including a database having a cross reference between a user name and a long lived IP address assigned to the mobile device, and said long lived IP address being in said private IP address space of said private network;

a network address translator (NAT), coupled to said server, suitable for connecting said private network to the public network using address translation, said NAT receiving said user name from a push client having an IP address in the public network and forwarding said user name to said server;

an application level gateway that is associated with said NAT and that, responsive to said forwarding said user name, receives said long lived IP address from one of said server and the mobile device and assigns a corresponding public IP address within the public IP address space

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of the public network which is returned to said push client, thereby enabling said push client to provide content to the mobile device using the assigned public IP address and enabling said mobile station to receive said content on said long lived IP address; and

a second push client with an IP address inside the private IP address space of the private network arranged and constructed to push services to the mobile device using said IP address of said second push client and using the said long lived IP address ~~wherein one of said server, said NAT, and said ALG operate to insure preferential access to the mobile device from the second push client.~~

18. (New) The private network of claim 17, wherein said content travels via a Gateway GPRS Support Node associated with said radio access network or via a Packet Data Serving Node associated with said radio access network.

19. (New) The private network of claim 18, wherein said push services travel via a Gateway GPRS Support Node associated with said radio access network or via a Packet Data Serving Node associated with said radio access network.

20. (New) The private network of claim 18, wherein one of said server, said NAT, and said ALG operate to insure preferential access to the mobile device from the second push client.